Florida El Niño Severe Weather Awareness

Talking Points

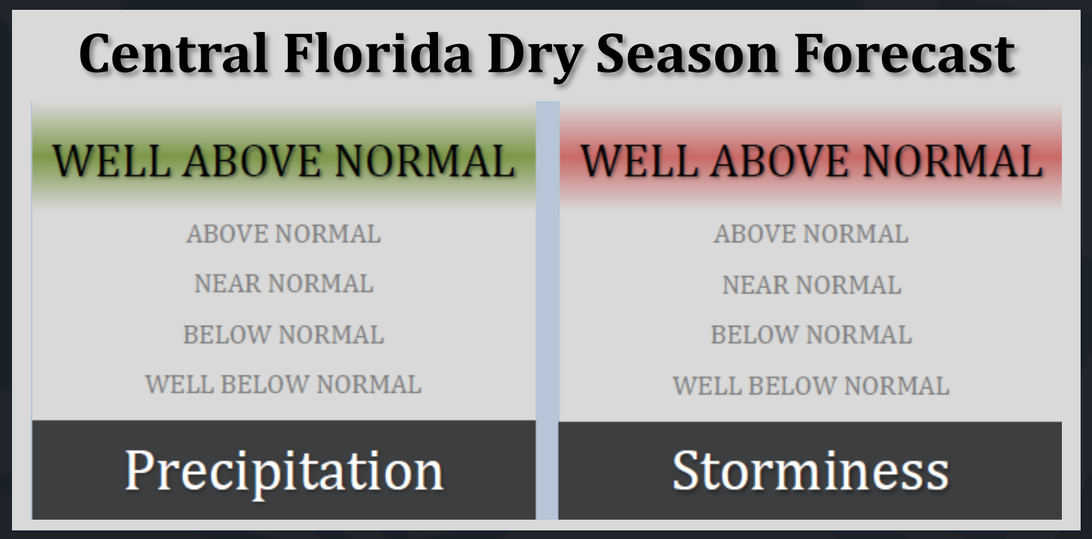
- Warmer waters over the eastern Pacific Ocean near the equator and the resulting influence on the atmosphere indicate a strong, and perhaps historic, El Niño this winter and upcoming spring

- Past strong El Niño events have been highly correlated with well above normal seasonal storminess across the Florida Peninsula during the “dry season” (November-April)

- An enhanced risk of severe weather is expected, bringing increased chances for strong-to-violent tornadoes and tornado outbreaks

- Much wetter than normal conditions are also favored, with increased chances for episodes of heavy rain and river flooding

- Given that the previous eight winters in Florida experienced storminess much below normal (with no strong-to-violent tornadoes), the likely transition to a very active season may come as a surprise to those who are unaware



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(Enhanced Fujita; EF) Tornado Damage Scale

EF Rating	Wind Speeds	Expected Damage		
EF-0	65-85 mph	'Minor' damage: shingles blown off or parts of a roof peeled off, damage to gutters/siding, branches broken off trees, shallow rooted trees toppled.		
EF-1	86-110 mph	'Moderate' damage: more significant roof damage, windows broken, exterior doors damaged or lost, mobile homes overturned or badly damaged.		
EF-2	111-135 mph	'Considerable' damage: roofs torn off well constructed homes, homes shifted off their foundation, mobile homes completely destroyed, large trees snapped or uprooted, cars can be tossed.		
EF-3	136-165 mph	'Severe' damage: entire stories of well constructed homes destroyed, significant damage done to large buildings, homes with weak foundations can be blown away, trees begin to lose their bark.		
EF-4	166-200 mph	'Extreme' damage: Well constructed homes are leveled, cars are thrown significant distances, top story exterior walls of masonry buildings would likely collapse.		
EF-5	> 200 mph	'Massive/incredible' damage: Well constructed homes are swept away, steel-reinforced concrete structures are critically damaged, high-rise buildings sustain severe structural damage, trees are usually completely debarked, stripped of branches and snapped.		

EF-0 to EF-1

Most Florida Tornadoes

EF-2 to EF-3

Rare Florida Tornadoes

EF-4

Only 2 documented!
04/15/58: Polk
04/04/66: Pinellas, Polk, Osceola

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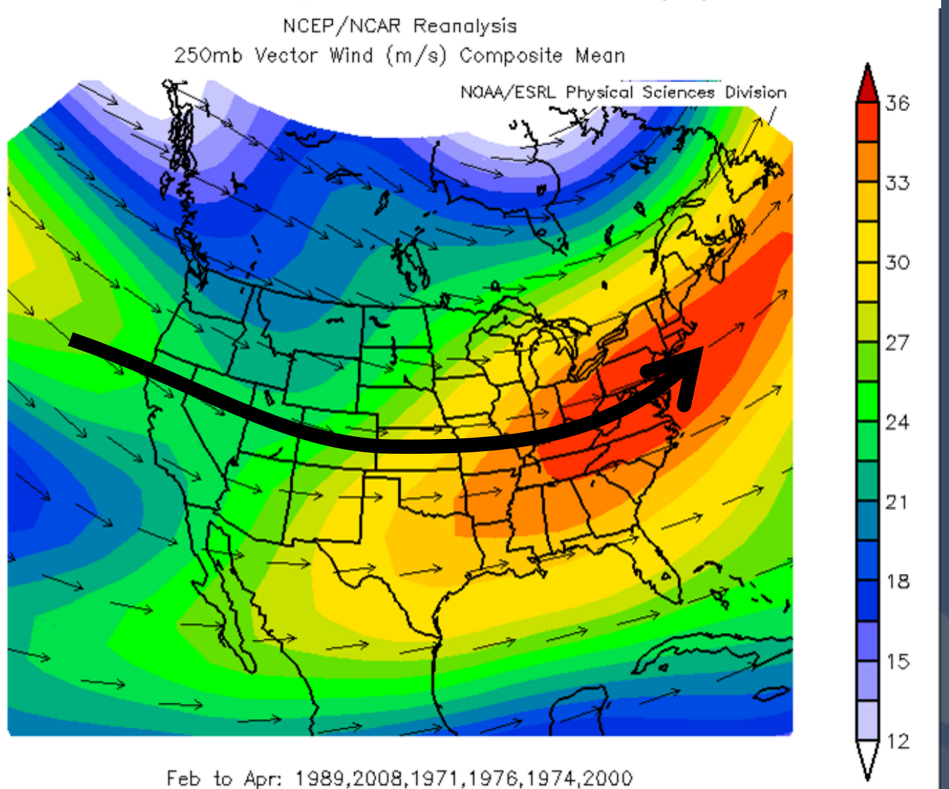
Jet Stream & Winter Storminess

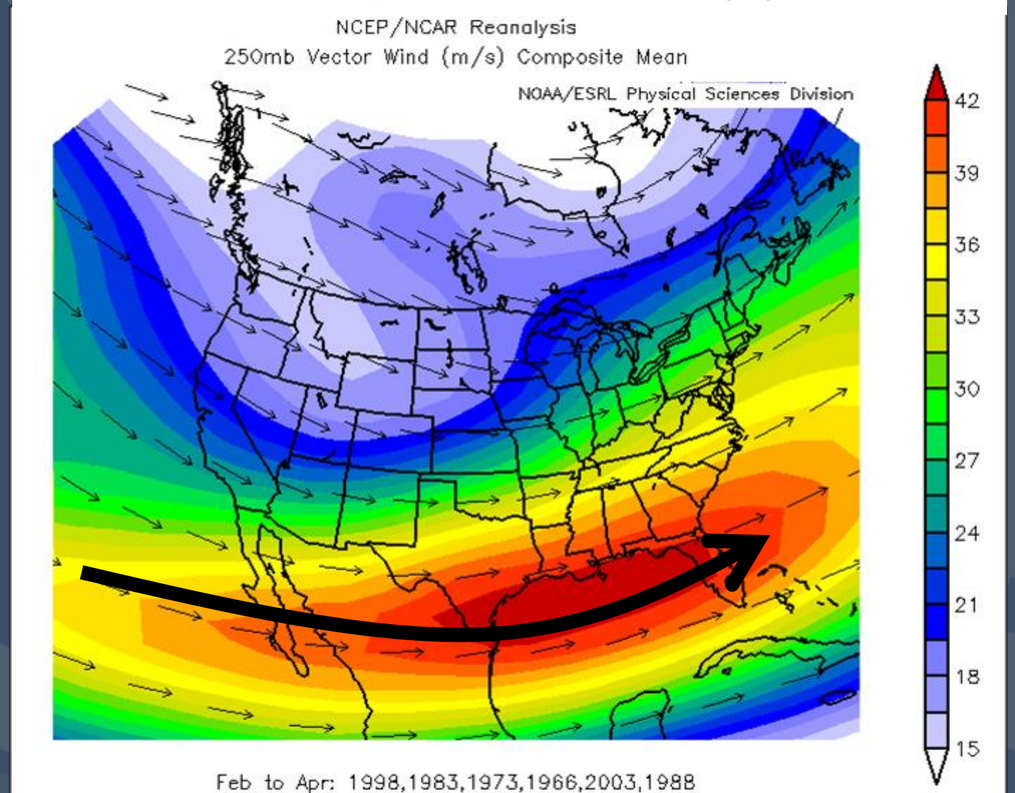
- There is a direct relationship between the presence of a strong El Niño and increased winter storminess in Florida, mainly due to a southward shift in the position of the jet stream over North America. Increased storminess brings a greater potential for severe weather with significant societal impacts

Strongest La Niña's (7)



Feb to Apr: 1989,2008,1971,1976,1974,2000

Strongest El Niño's (7)



Feb to Apr: 1998,1983,1973,1966,2003,1988

Florida El Niño Severe Weather Awareness

*El Niño Sets the **Large-Scale Environmental** Stage!*

- Strong jet stream winds present much of winter/spring (generates enhanced lift)
- Low Pressure Systems track farther south reaching lower-latitudes (more frequent frontal passages; associated pre-frontal warm/moist air masses, squall lines, etc.)
- More opportunities for instability, moisture, and wind shear to come together across the peninsula to create environments favorable for severe thunderstorms

Key Points

- El Niño's don't cause violent tornadoes in Florida, but they enable them

✓ El Nino's SET THE STAGE!

✓ Environmental conditions become more favorable, more often

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Florida El Niño Severe Weather Awareness

*Large-Scale vs. **Small-Scale environments***

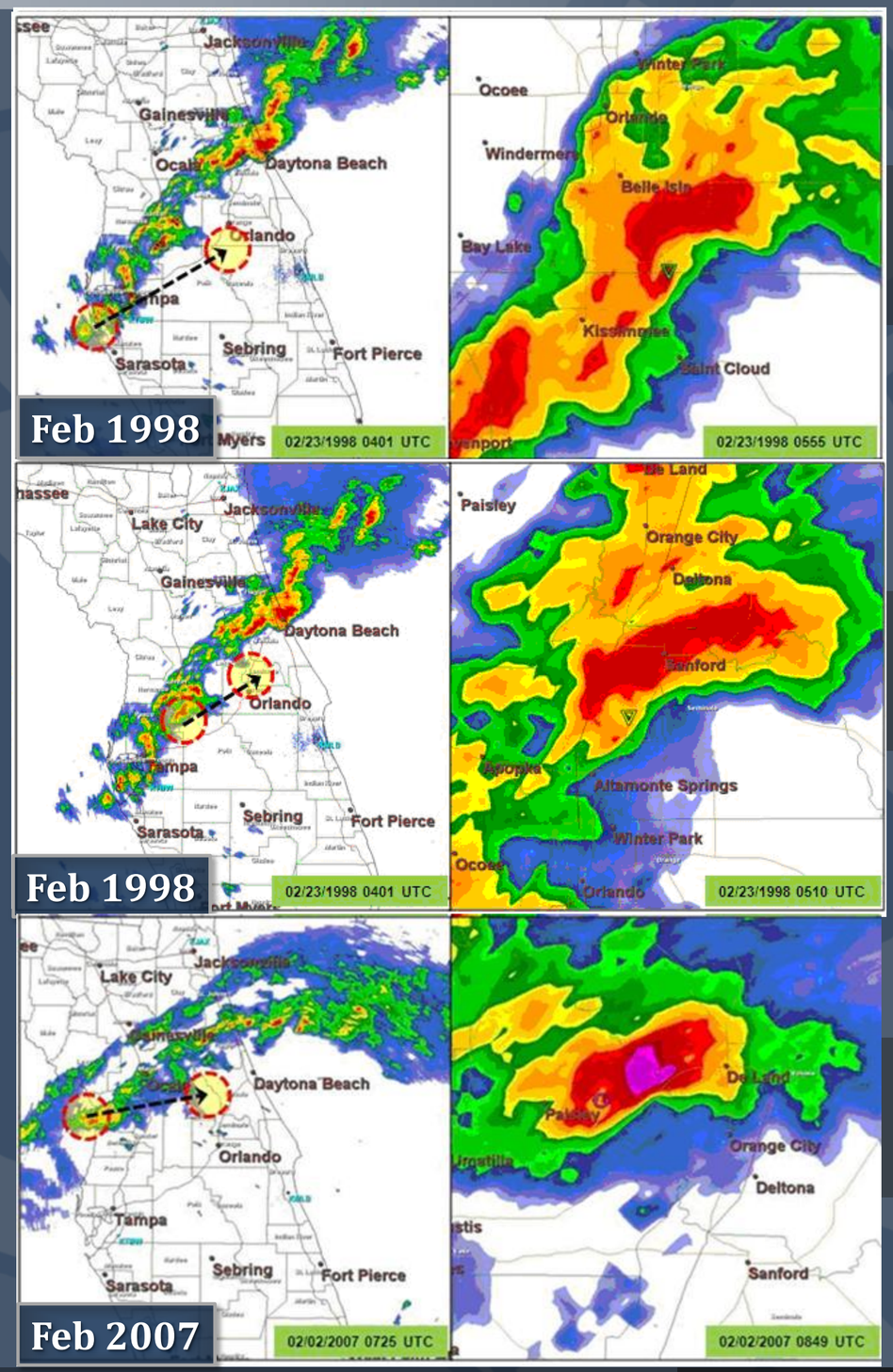
- Even when the large-scale environment becomes favorable, small-scale conditions must also come together for an outbreak of severe thunderstorms and tornadoes to occur

✓ Warm-fronts and other local boundaries focus thunderstorms and concentrate wind shear

✓ Individual thunderstorms can also form ahead of squall lines in the warmer and more humid air

✓ The threat of tornadoes, damaging wind, and large hail develops quickly. Movement is often fast resulting in threat areas which stretch over multiple counties for several hours

✓ The images to the right reveal the three deadliest *"tornadic thunderstorms"* in Florida within the modern radar era, resulting in 30% of all known tornado deaths in state history!



25 fatalities

16 fatalities

21 fatalities

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Recent Events

Recent El Niño Tornado Impacts

February 22-23, 1998
11 p.m. – 3 a.m.
Osceola / Orange / Seminole
42 fatalities (3 F3s)

The two deadliest tornado outbreaks in Florida history - total of 63 lives lost

February 2, 2007
1 a.m. – 3 a.m.
Lake / Volusia
21 fatalities (2 EF3s)

Other Recent Noteworthy El Niño Tornado Impacts

November 2, 1997; Midnight-1am
Volusia Co.
22 injuries (F3)

December 25, 2006; 1-3 pm
Volusia Co.
7 injuries (2 F2's)

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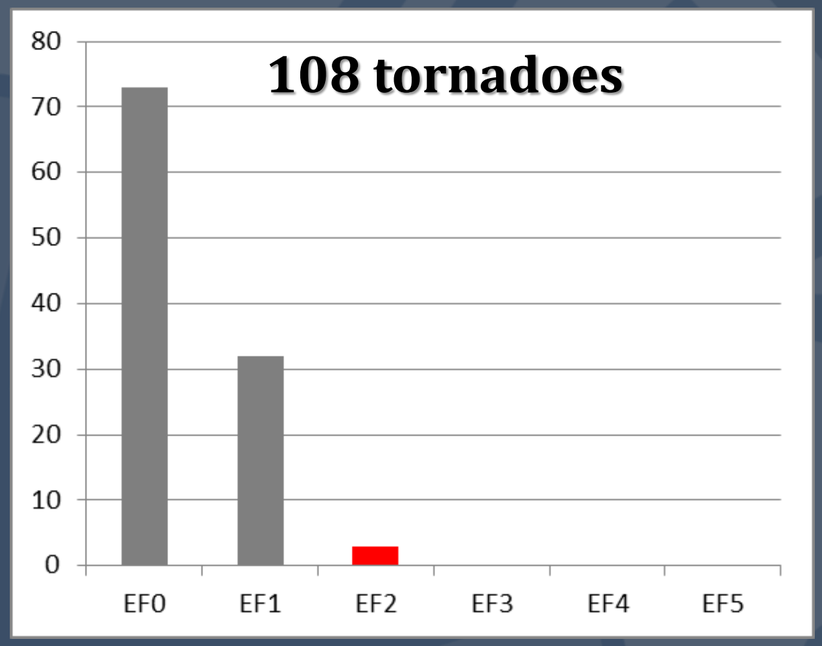
Non-El Niño vs. El Niño: A Look Back…

7 Recent Years (Non-El Niño)

The recent period of below-normal winter/spring severe weather

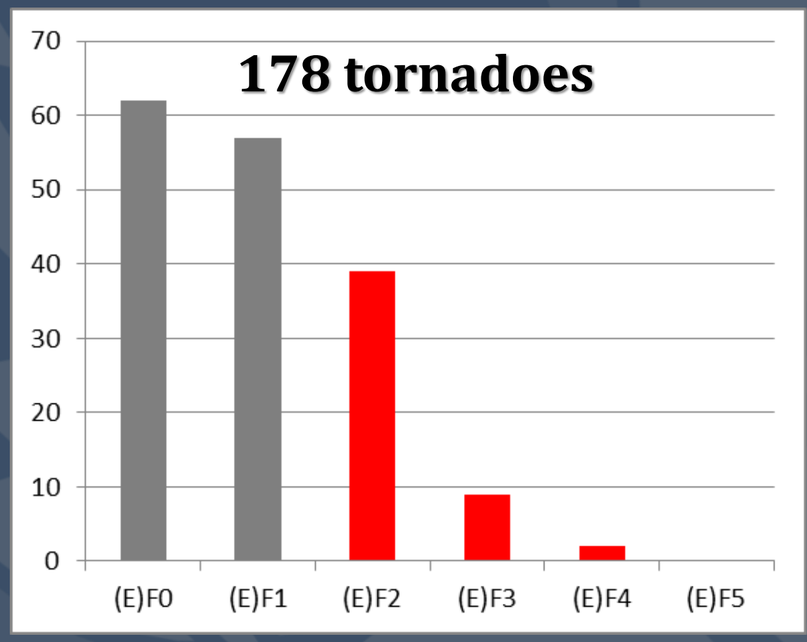
Recent Years (Nov. 1 - Apr. 30)
2007-2008
2008-2009
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015



6 Strong El Niño years & 2006-07 El Niño

Above-normal winter/spring tornadoes during El Niño years

Strong El Nino Years (Nov. 1 - Apr. 30)
1957-1958
1965-1966
1972-1973
1982-1983
1991-1992
1997-1998
2006-2007



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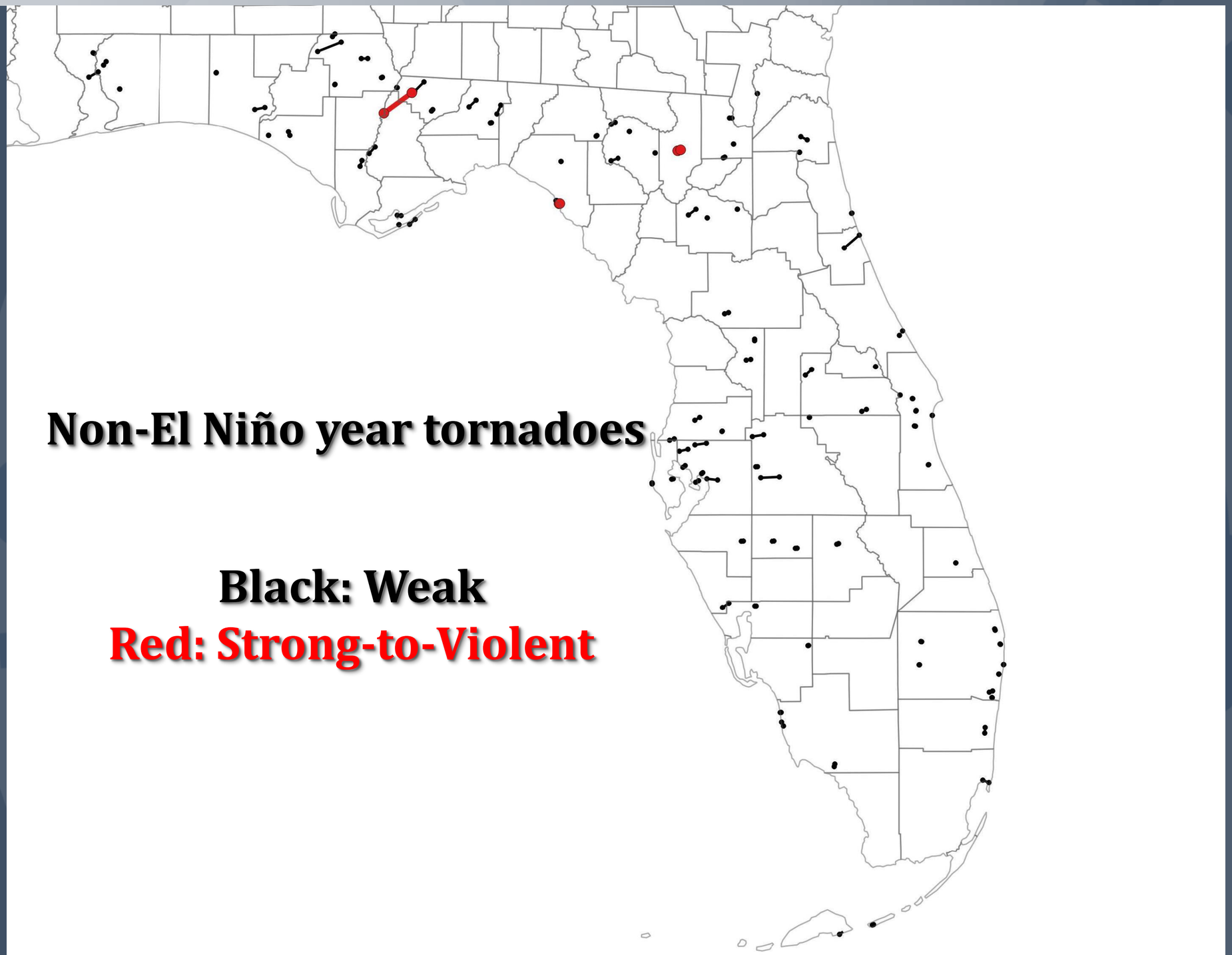
Non-El Niño Year vs. El Niño Year Tornadoes in Florida



Non-El Niño year tornadoes

Black: Weak

Red: Strong-to-Violent

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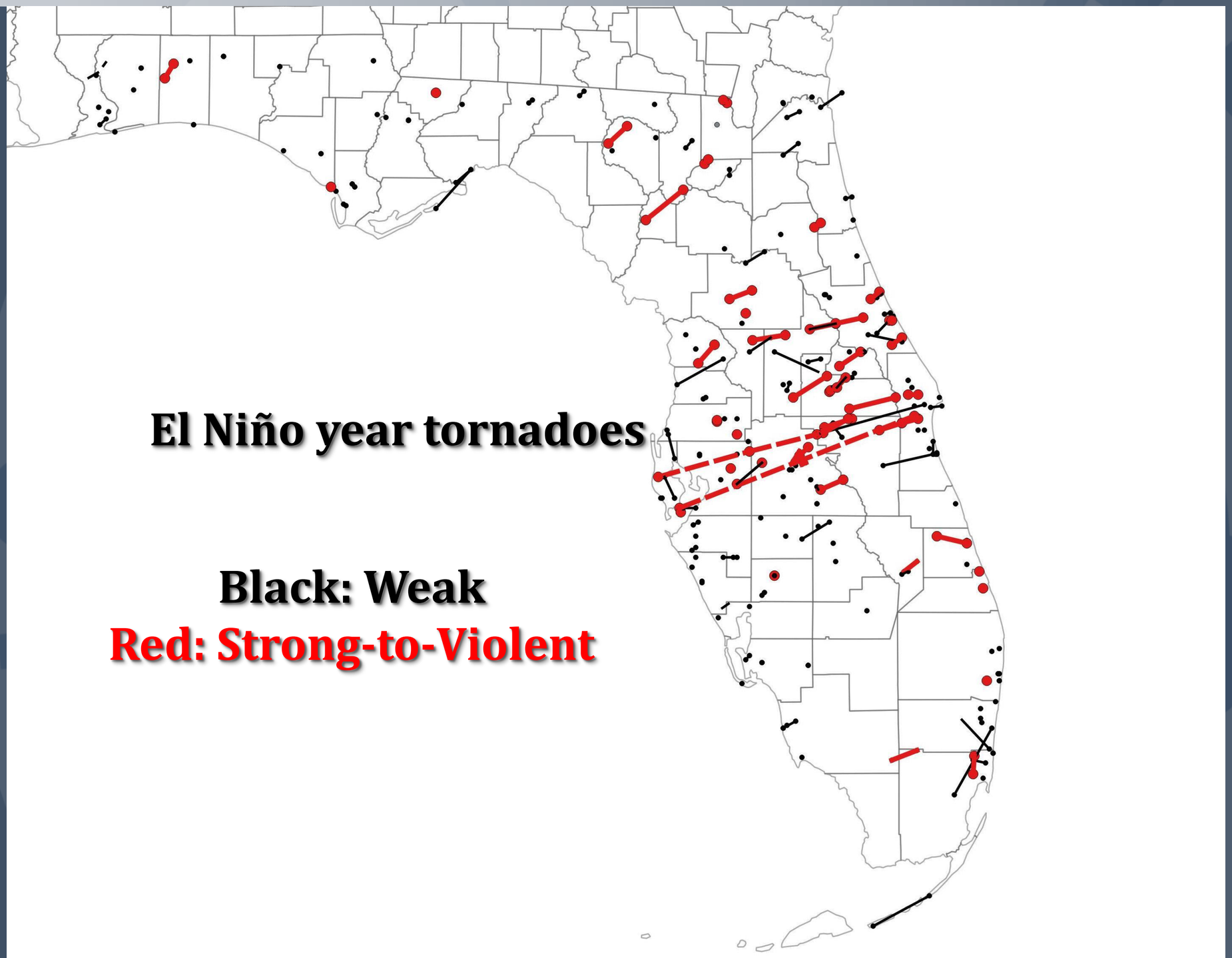
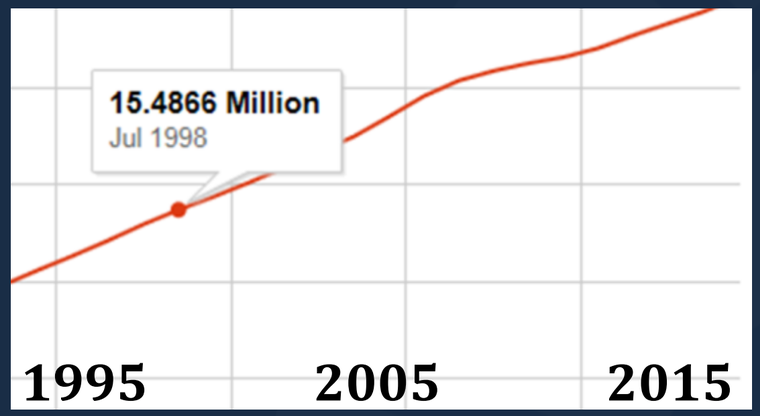
Non-El Niño Year vs. El Niño Year Tornadoes in Florida



Florida El Niño Severe Weather Awareness

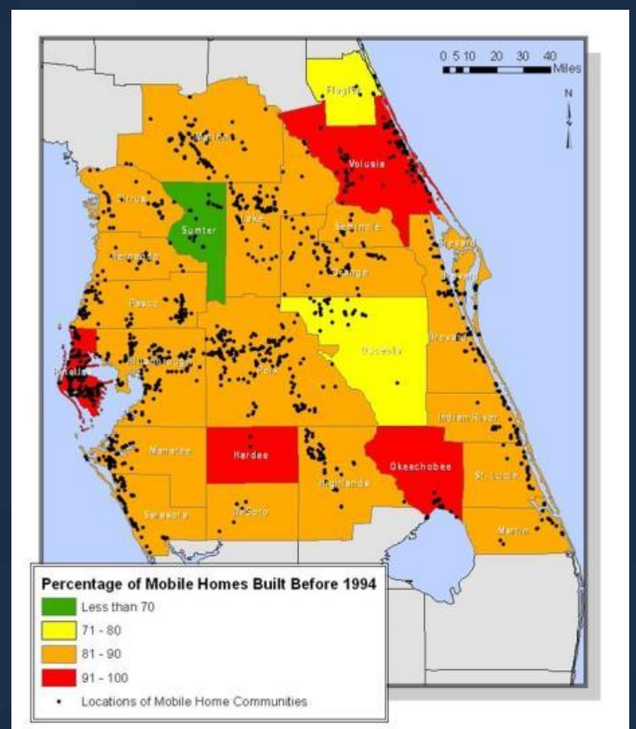
Are People Prepared?

Increasing Vulnerability



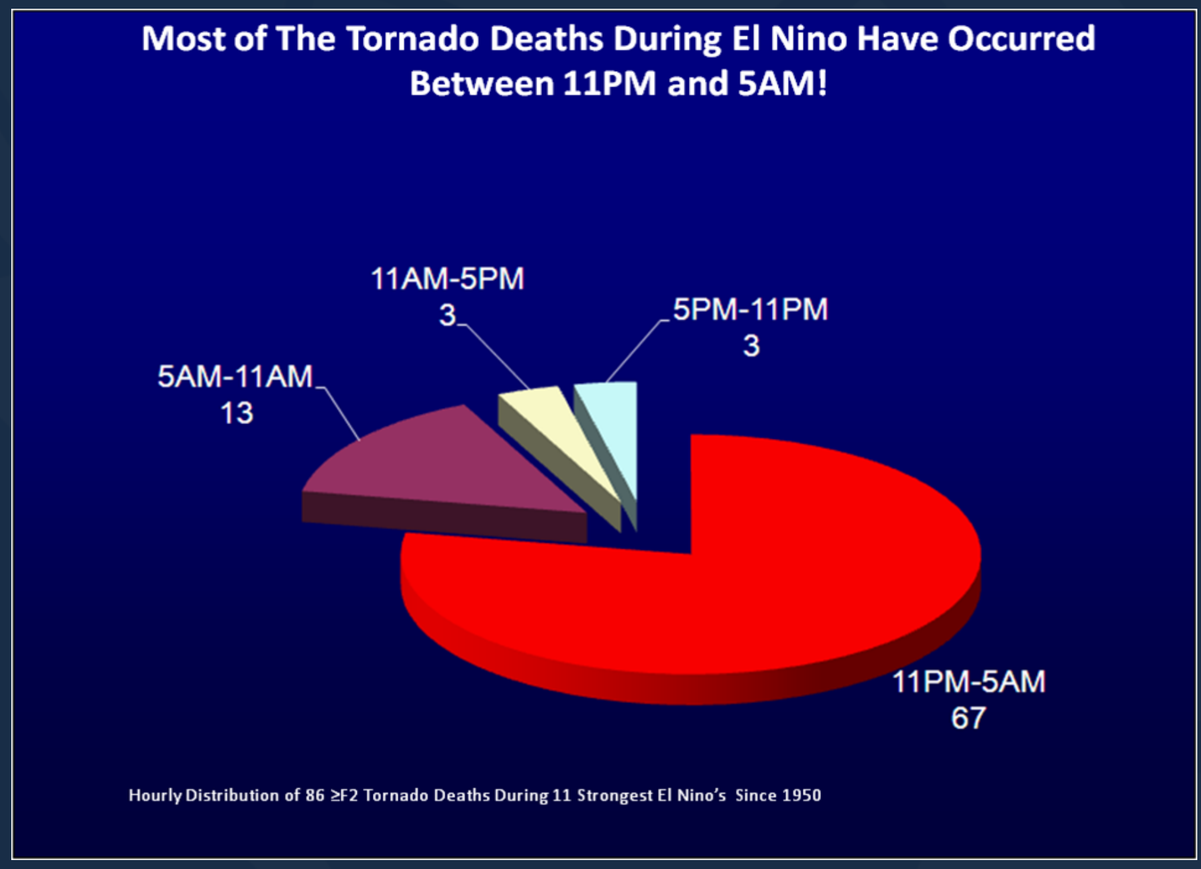
- 4.7 million new residents since 1998 outbreak!
- Many unaware of Florida (winter) severe weather risks

- High percentage of mobile homes
- Much lower threshold for damage
- High winter occupancy
- Greater casualty rate



RV Parks, Manufactured and Mobile Home Communities in Central Florida

Time of Day



Overnight Tornadoes

- Favored time period
- Lower perception of threat
- Decreased awareness (asleep)

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Florida El Niño Severe Weather Awareness

Public Awareness & Safety

- Monitor local television and radio for severe weather situations
  - ✓ Such evolving threats are typically identified a few days in advance, with more specific information about the most likely time(s) and location(s) of impact provided one day in advance

- Have the ability to receive timely weather warnings
  - ✓ This can save lives, especially with dangerous, night-time tornadoes

- Have a dependable <u>audible-alerting</u> feature or device
  - ✓ Ensure that you have a *NOAA Weather Radio* (programmed, with fresh batteries) and/or the *Wireless Emergency Alert* feature on your cell phone (or NWS warnings relayed by text message from Emergency Management or Media, or another reliable app)

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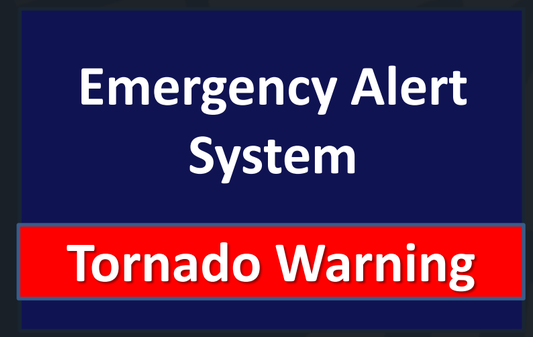
Florida El Niño Severe Weather Awareness

Preparation & Taking Action

IF A THREAT FOR DEADLY TORNADOES EXISTS FOR YOUR LOCATION (ESPECIALLY OVERNIGHT):

- ✓ If living in a mobile home, RV, or boat, make plans to stay with family or friends. Leave before the severe weather arrives. If you can't leave, identify the closest sturdy shelter such as a clubhouse or laundry room and go there immediately if a warning is issued for your location; last resort (link)
- ✓ Identify your shelter location and *"safe place"* in advance of a threat (i.e. small interior room on the lowest floor of your home or business, far from windows); ensure everyone is aware of the location
- ✓ Words of advice from those who have survived tornadoes include: *"putting on your shoes, placing your (charged) cell phone in your pocket, making good use of any kind of helmet and/or pillow to protect your head, and holding tightly on to one another."* These actions must be done quickly and prior to the arrival of the tornado



IF A TORNADO WARNING IS ISSUED FOR YOUR LOCATION:

- ✓ Take immediate action and move to your shelter, remain in place until the threat passes

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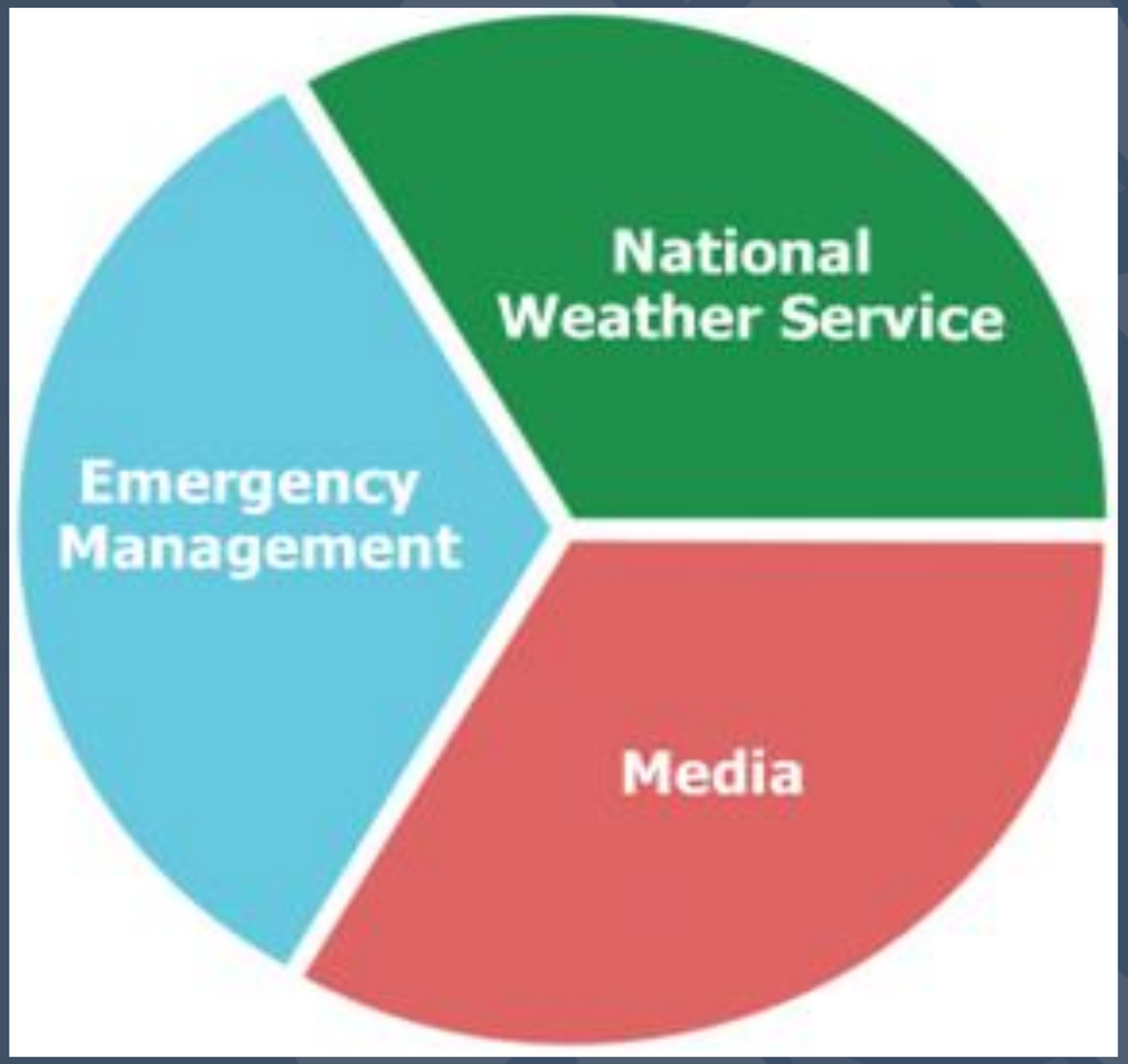
Partnerships



- A strong partnership exists between the National Weather Service, Emergency Management agencies, and the News Media
- ✓ By working together, these partners deliver and share timely and accurate information ahead of, during, and after weather events to help minimize significant impacts to lives and property